

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R070XC101NM

Site Name: Swale

Precipitation or Climate Zone: 13 to 16 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs in concave or depressional positions of valleys, along drainageways, or as sinkholes. This site receives significant runoff from adjacent sites to increase the effective moisture. This site transports water to bottomlands. Because of extra water, the plant community "stands out" due to increases production. Slopes range from 0 to 5 percent but are not generally less than 3 percent. Direction of slope varies and is not significant. Elevations range from 4,600 to 7,000 feet above sea level.

Land Form:

1. Depression

2. Valley

3. Drainageway

Aspect:

1. N/A

2.

3.

| | | |
|-----------------------------------|----------------|----------------|
| | Minimum | Maximum |
| Elevation (feet) | 4,600 | 7,000 |
| Slope (percent) | 0 | 5 |
| Water Table Depth (inches) | N/A | N/A |
| Flooding: | Minimum | Maximum |
| Frequency | Rare | Rare |
| Duration | Brief | Brief |
| Ponding: | Minimum | Maximum |
| Depth (inches) | N/A | N/A |
| Frequency | N/A | N/A |
| Duration | N/A | N/A |

Runoff Class:

Negligible to high.

CLIMATIC FEATURES

Narrative:

The climate of the area is "semi-arid continental."

The average annual precipitation ranges from 13 to 16 inches. Variations of 5 inches, more or less, are not uncommon. Seventy-five percent of the precipitation falls from April to October. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms.

Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is about 50 degrees F with extremes of -29 degrees F in the winter and 103 degrees F in the summer.

The average frost-free season is 130 to 160 days. The last killing frost is in early May and the first killing frost is in early October.

Both temperature and precipitation favor warm-season species. However, about 40 percent of the precipitation is favorable to cool-season species. This allows the cool-season plants to occupy an important component of this site. The effective precipitation of this site is increased, due to its position on the landscape, by runoff from adjoining sites. This site also serves as a cold air drainageway. These two factors are both favorable to cool-season species and also increase the variety and production of the vegetative community. Strong winds that carry dust from the west and southwest blow across the area from February to June and dry the soil during a critical period for plant growth.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

| | Minimum | Maximum |
|--|----------------|----------------|
| Frost-free period (days): | 131 | 173 |
| Freeze-free period (days): | 155 | 187 |
| Mean annual precipitation (inches): | 13 | 16 |

Monthly moisture (inches) and temperature (°F) distribution:

| | Precip. Min. | Precip. Max. | Temp. Min. | Temp. Max. |
|-----------|--------------|--------------|------------|------------|
| January | .34 | .92 | 15.6 | 42.1 |
| February | .34 | .81 | 19.9 | 52.9 |
| March | .23 | .98 | 24.4 | 59.7 |
| April | .39 | .96 | 31.4 | 68.9 |
| May | .85 | 1.61 | 39.2 | 77.7 |
| June | .89 | 1.62 | 46.9 | 87.1 |
| July | 1.77 | 2.75 | 53.1 | 88.5 |
| August | 2.46 | 3.22 | 51.9 | 85.7 |
| September | 1.54 | 2.26 | 44.3 | 80.4 |
| October | 1.00 | 1.51 | 32.8 | 70.5 |
| November | .57 | 1.02 | 22.2 | 57.5 |
| December | .34 | 1.16 | 15.9 | 49.3 |

Climate Stations:

| Station ID | Location | Period | |
|------------|---------------------------------|----------|----------|
| | | From: | To: |
| 291918 | Clines Corners7SE, NM | 12/10/68 | 11/30/00 |
| 292096 | Corona 11 SSW, NM | 12/01/77 | 09/30/92 |
| 293060 | Estancia, NM | 01/01/14 | 12/31/00 |
| 293649 | Gran Quivira Natl. Monument, NM | 06/01/38 | 12/31/00 |
| 295965 | Mountainair, NM | 03/01/14 | 12/31/00 |
| 299405 | Vaughn, NM | 01/01/71 | 12/31/00 |

INFLUENCING WATER FEATURES**Narrative:**

This site is not influenced by water from wetland or stream.

Wetland description:

| System | Subsystem | Class |
|--------|-----------|-------|
| N/A | | |

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

The soils on this site are deep and well drained. The surface textures are loam and clay loam. Subsurface textures are clay loam or clay. Permeability is moderately slow to slow. The available water-holding capacity is high. The effective rooting depth is 60 inches or more. These soils, once wetted, can store water for relatively long periods. Soil blowing hazard is moderate and water erosion hazard could be severe.

Parent Material Kind: Alluvium

Parent Material Origin: Mixed

Surface Texture:

| |
|---------------|
| 1. Loam |
| 2. Clay loam |
| 3. Silty loam |

Surface Texture Modifier:

| |
|--------|
| 1. N/A |
| 2. |
| 3. |

Subsurface Texture Group: Clayey

Surface Fragments <=3" (% Cover): N/A

Surface Fragments >3" (% Cover): N/A

Subsurface Fragments <=3" (%Volume): 15 to 35

Subsurface Fragments >=3" (%Volume): N/A

| | Minimum | Maximum |
|--|----------------|------------------------|
| Drainage Class: | <u>Well</u> | <u>Very well</u> |
| Permeability Class: | <u>Slow</u> | <u>Moderately slow</u> |
| Depth (inches): | <u>60</u> | <u>>72</u> |
| Electrical Conductivity (mmhos/cm): | <u>0.00</u> | <u>2.00</u> |
| Sodium Absorption Ratio: | <u>N/A</u> | <u>N/A</u> |
| Soil Reaction (1:1 Water): | <u>6.1</u> | <u>9.0</u> |
| Soil Reaction (0.1M CaCl2): | <u>N/A</u> | <u>N/A</u> |
| Available Water Capacity (inches): | <u>9</u> | <u>12</u> |
| Calcium Carbonate Equivalent (percent): | <u>N/A</u> | <u>N/A</u> |

PLANT COMMUNITIES

Ecological Dynamics of the Site:

Plant Communities and Transitional Pathways (diagram)

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 **Narrative Label:** HCPC

Plant Community Narrative: Historic Climax Plant Community

The aspect of this site is that of a grassland. Mid-grasses are dominant with short grasses and a variety of forbs evenly distributed. The landscape is dotted with occasional shrubs or half-shrubs. This site occurs in a position to receive and transport surface water from uplands to bottomlands. This extra water makes the vegetation noticeably denser, stand higher, and is heavier than adjoining upland sites.

Canopy Cover:

Shrubs and half-shrubs 5 %

Ground Cover (Average Percent of Surface Area).

Grasses & Forbs 30

Bare ground 33

Surface cobble and stone 2

Litter (percent) 30

Litter (average depth in cm.) 3

Plant Community Annual Production (by plant type): _____

| Plant Type | Annual Production (lbs/ac) | | |
|--------------------|----------------------------|------|------|
| | Low | RV | High |
| Grass/Grasslike | 630 | 1015 | 1400 |
| Forb | 180 | 290 | 400 |
| Tree/Shrub/Vine | 72 | 116 | 160 |
| Lichen | | | |
| Moss | | | |
| Microbiotic Crusts | | | |
| Total | 900 | 1450 | 2000 |

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|----------------------------------|---------------------------|-------------------------|
| 1 | PASM | Western Wheatgrass | 218 - 435 | 218 - 435 |
| 2 | PAOB | Vine-mesquite | 145 - 290 | 145 - 290 |
| 3 | SPAI | Alkali Sacaton | 145 - 218 | 145 - 218 |
| 4 | BOSA BOBA3 | Silver Bluestem Cane Bluestem | 102 - 145 | 102 - 145 |
| 5 | ELEL5 | Bottlebrush Squirreltail | 102 - 145 | 102 - 145 |
| 6 | PLMU3 PLJA | Tobosa Galleta | 145 - 218 | 145 - 218 |
| 7 | BOGR2 | Blue Grama | 73 - 145 | 73 - 145 |
| 8 | MURE MURI | Creeping Muhly Mat Muhly | 73 - 145 | 73 - 145 |
| 9 | PAVI2 | Switchgrass | 73 - 145 | 73 - 145 |
| 10 | 2GRAM | Other Grasses | 73 - 145 | 73 - 145 |

Plant Type - Forb

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|--|---------------------------|-------------------------|
| 11 | SPCO RACO3 | Scarlet Globemallow Upright Prairie Coneflower | 44 - 73 | 44 - 73 |
| 12 | MIGL3 | Smooth Four-o'clock | 44 - 73 | 44 - 73 |
| 13 | ARGL9 ACNA2 | Cudweed Sagewort Desert Holly | 44 - 73 | 44 - 73 |
| 14 | SOEL DINE AMPS | Silverleaf Nightshade New Mexico Thistle Western Ragweed | 44 - 73 | 44 - 73 |
| 15 | 2FORB | Other Forbs | 15 - 73 | 15 - 73 |

Plant Type – Tree/Shrub/Vine

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|----------------------------------|---------------------------|-------------------------|
| 16 | ATCA2 FAPA | Fourwing Saltbush Apacheplume | 44 - 73 | 44 - 73 |
| 17 | KRLA2 | Winterfat | 44 - 73 | 44 - 73 |
| 18 | OPIM | Walkingstick Cholla | 15 - 73 | 15 - 73 |
| 19 | GUSA2 | Broom Snakeweed | 15 - 73 | 15 - 73 |
| 20 | 2SD | Other Shrubs | 15 - 44 | 15 - 44 |

Plant Type - Lichen

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|-------------|---------------------------|-------------------------|
| | | | | |
| | | | | |

Plant Type - Moss

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|-------------|---------------------------|-------------------------|
| | | | | |
| | | | | |

Plant Type - Microbiotic Crusts

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|-------------|---------------------------|-------------------------|
| | | | | |
| | | | | |

Other grasses which could appear on this site would include: sideoats grama, black grama, ear muhly, ring muhly, threeawn spp., sixweeks grama and wolf tail.

Other woody species would include: englemann pricklypear and wolfberry.

Other forbs would include: verbena, senna, and annual sunflower.

Plant Growth Curves

Growth Curve ID 4301NM

Growth Curve Name: HCPC

Growth Curve Description: Mixed cool/warm-season grassland

| Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|------|------|-------|-------|-----|------|------|------|-------|------|------|------|
| 0 | 0 | 5 | 7 | 10 | 15 | 25 | 25 | 8 | 5 | 0 | 0 |

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitat for a resident animal community characterized by pronghorn antelope, Botta's pocket gopher, badger, blacktailed jackrabbit, meadowlark, sparrow hawk, bullsnake, western diamondback rattlesnake, plains spadefoot toad, and ornate box turtle.

Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations

| Soil Series | Hydrologic Group |
|----------------------------------|-------------------------|
| Asparas | B |
| Aridic – Argiustolls, fine | C |
| Aridic – Argiustolls, fine loamy | C |
| Albinas | C |
| Corona | C |
| Gabaldon | B |
| Manzano | B |
| Partri | C |
| Reventon | B |
| Rock Outcrop | B |
| Ruidoso Variant | C |
| Rune | C |
| Sampson | B |

Recreational Uses:

This site offers fair to poor camping, hiking, and picnicking. Hunting for antelope is excellent, bird hunting is good, and trapping fur-bearing animals is good. During years of abundant spring moisture, wildflowers are numerous with a wide variety of color. This site provides an "oasis" type effect in the general landscape.

Wood Products:

This site provides no wood products.

Other Products:

Grazing:

This site provides forage suitable for grazing at any season of the year by all classes of cattle and sheep. Goats are unsuited for this site due to the lack of woody browse which is highly preferred and constitutes a large portion of the goat diet. However, the adjoining sites may be well suited for goats. If this site is in a deteriorated state, goats may be used to help control woody species that have increased or invaded this site. In general, mismanagement of cattle grazing will cause a decrease in palatable mid-grasses and forbs with a corresponding increase in low-value grasses, forbs and shrubs. Sheep grazing will cause a decrease in short grasses and forbs. Continuous mismanagement by any animal species will cause a decrease in vigor and abundance of western wheatgrass, vine-mesquite, bluestems, winterfat, and fourwing saltbush. This will cause a corresponding increase of creeping and mat muhly, tobosa and cholla. This will amount to a greatly reduced grazing value and reduced ground cover. The reduced ground cover leaves this site open for severe water erosion that may require expensive structural measures to correct. Grazing when the soil surface is wet will result in severe soil compaction which will greatly reduce water intake and would be a detriment to the entire site, especially the deeper rooted, more productive species. A system of grazing which varies the seasons of use will allow for a balanced plant community providing higher-quality forage during all seasons of the year.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

| Similarity Index | Ac/AUM |
|------------------|-----------|
| 100 - 76 | 1.5 – 3.5 |
| 75 – 51 | 2.5 – 4.5 |
| 50 – 26 | 3.5 – 6.0 |
| 25 – 0 | 6.0+ |

| Plant Part | Code | Species Preference | Code |
|-------------------|------|--------------------|------|
| Stems | S | None Selected | NS |
| Leaves | L | Preferred | P |
| Flowers | F | Desirable | D |
| Fruits/Seeds | F/S | Undesirable | U |
| Entire Plant | EP | Not Consumed | NC |
| Underground Parts | UP | Emergency | E |
| | | Toxic | T |

Plant Preference by Animal Kind:

Animal Kind: Livestock

Animal Type: Cattle

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---------------------|--------------------------|------------|--------------------|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Western Wheatgrass | Pascopyrum smithii | EP | D | D | P | P | P | D | D | D | D | D | P | P |
| Vine-mesquite | Panicum obtusum | EP | D | D | D | D | D | D | D | D | D | D | D | D |
| Alkali Sacaton | Sporobolus airoides | EP | D | D | D | D | D | P | P | P | U | U | U | D |
| Fourwing Saltbush | Atriplex canescens | L/S | P | P | P | P | P | D | D | D | D | P | P | P |
| Winterfat | Krascheninnikovia lanata | L/S | P | P | P | D | D | D | D | D | D | P | P | P |
| Scarlet Globemallow | Sphaeralcea coccinea | EP | U | U | D | D | D | D | D | D | U | U | U | U |

Animal Kind: Livestock

Animal Type: Sheep

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---------------------|--------------------------|------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Scarlet Globemallow | Sphaeralcea coccinea | EP | U | U | P | P | P | D | D | D | D | D | D | U |
| Prairie Coneflower | Ratibida columnifera | EP | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Smooth Four o'clock | Mirabilis glabra | EP | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Cudweed Sagewort | Artemisia glomerata | L/S | N/S | N/S | NS | NS | NS | NS | NS | NS | NS | NS | N/S | N/S |
| Western Wheatgrass | Pascopyrum smithii | EP | U | U | D | D | D | D | D | D | D | D | U | U |
| Vine-mesquite | Panicum obtusum | EP | D | D | D | D | D | D | D | D | D | D | D | D |
| Fourwing Saltbush | Atriplex canescens | L/S | P | P | D | D | D | D | D | D | P | P | P | P |
| Winterfat | Krascheninnikovia lanata | L/S | P | P | P | P | P | P | P | P | P | P | P | P |

Animal Kind: Wildlife

Animal Type: Antelope

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|--------------------------|--------------------------|------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Scarlet Globemallow | Sphaeralcea coccinea | EP | U | U | P | P | P | D | D | D | D | D | D | U |
| Prairie Coneflower | Ratibida columnifera | EP | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Smooth Four o'clock | Mirabilis glabra | EP | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Cudweed Sagewort | Artemisia glomerata | L/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Western Wheatgrass | Pascopyrum smithii | EP | U | U | D | D | D | D | U | U | U | U | U | U |
| Bottlebrush Squirreltail | Elymus elymoides | EP | U | U | D | D | D | D | U | U | U | U | U | U |
| Fourwing Saltbush | Atriplex canescens | L/S | D | D | D | D | D | D | D | D | D | D | D | D |
| Winterfat | Krascheninnikovia lanata | L/S | D | D | D | D | D | D | D | D | D | D | D | D |

Animal Kind: Wildlife

Animal Type: Quail & Dove

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---------------------|-----------------------|------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Scarlet Globemallow | Sphaeralcea coccinea | F/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Fourwing Saltbush | Atriplex canescens | F/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Apacheplume | Fallugia paradoxa | F/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Broom Snakeweed | Gutierrezia sarothrae | F/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |
| Vine-mesquite | Panicum obtusum | F/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S | N/S |

SUPPORTING INFORMATION

Associated sites:

| Site Name | Site ID | Site Narrative |
|-----------|---------|----------------|
| | | |

Similar sites:

| Site Name | Site ID | Site Narrative |
|-----------|---------|----------------|
| | | |

State Correlation:

This site has been correlated with the following sites: _____

Inventory Data References:

| Data Source | # of Records | Sample Period | State | County |
|-------------|--------------|---------------|-------|--------|
| | | | | |

Type Locality:

State: New Mexico

County: Chavez, De Baca, Guadalupe, Lincoln, San Miguel, Santa Fe, Torrance

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? Yes ☐ No ☐

General Legal Description: _____

Relationship to Other Established Classifications:

Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the Pecos-Canadian Plains and Valleys 70 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Chaves, De Baca, Guadalupe, Lincoln, Sna Miguel, Santa Fe, Torrance.

Characteristic Soils Are:

Asparas, Partri, Aridic Argiustolls, Albinas Corona

Other Soils included are:

Gabaldon, Manzano, Reventon, Rock Outcrop Ruidoso, Rune, Sampson

Site Description Approval:

Author

Don Sylvester

Date

11/25/81

Approval

Donald H. Fulton

Date

03/05/82

Site Description Revision:

Author

Elizabeth Wright

Date

06/12/01

Approval

George Chavez

Date

12/17/02